A GUIDE TO DOVTAPE

The program as revised to 1 September 1966

APPENDIX IV

to Letter Report on
NASA Grant NGR 47-005-036

Prepared by

R. L. Tomlin, Jr.

Report No. UVAL-4031-104-66U

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I. INTRODUCTION

The program, DOVTAPE, is written in the Extended ALGOL language of the Burroughs B-5500 Data Processing System (with Disk File hardware). It is the master file maintenance program for the VIR Processing System. Here, as in the other programs of the system, the interests and convenience of the human user have been important factors in the design of the program.

The present document consists of a brief section of general remarks about DOVTAPE, followed by a detailed description of the program features and of the input data cards which control those features. For completeness, the document, The VIR Processing System, must also be regarded as a source of information about DOVTAPE, especially for details as to the file structure and record format for the master file, VIRTAPE.

II. GENERAL REMARKS CONCERNING DOVTAPE

VIRTAPE, the master file of VIRS, is tailored to meet two objectives:

(1) It is well blocked, and thus tape storage space is conserved.

(2) Each VIR in the file has associated with it a brief record of its history. This serves to relate back to the batch from which the VIR was entered into the system.

The main purpose of DOVTAPE is to create reels of the file, VIRTAPE, by reading partial reel files (PRF's), or to update such reels by reading some combination of VIRTAPE reels and PRF's. Simple copying is also included in this.

When the update process involves VIRS already on a VIRTAPE reel, there is a question of interaction with the program, READFIX. Specifically, READFIX must be used to read the reel in question and produce a PRF containing the VIRS which are to be altered. READFIX is then used to "patch" those VIRS and thereby obtain an updated PRF.

At this point, DOVTAPE comes back into play by merging the original VIRTAPE reel with the updated PRF. In this merging process, DOVTAPE will replace each distinguished VIRTAPE VIR with its correspondent on the PRF, and the result will be an updated VIRTAPE reel.

In addition to the above actions, DOVTAPE has the capability of providing printed output information from the master file, this in the form of VIR dumps and/or history dumps. It is also possible to have a directory of the master file printed out.

All the activities possible with the program may be summarized as follows:

The DOVTAPE program is used to create and maintain VIRTAPE files, these being the master files for the storage of VIRS. Information dumps from such files are included as a part of the activities engaged in by DOVTAPE. Basically, three types of job action are possible with DOVTAPE. They are, briefly, as follows:

(I) Read a VIRTAPE file and dump certain information from it onto the line printer.

(II) Rewrite the trailer (ending) label of a given reel of an existing VIRTAPE file, with the option of also dumping as in (I), above.

(III) Create a VIRTAPE file by using selected records from existing VIRTAPE files and/or partial reel files (PRF's). There is also the option of dumping as in (I), above. If called for, this dumping will apply to the information being written on the output file.

DOVTAPE is controlled by the contents of a card-image file with MFID zero and FID equal to "TELLALL." Given now is a detailed discussion of the structure of TELLALL. Within this discussion, the features of DOVTAPE, and the means of controlling those features, are described in full.

III. THE CARD-READER FILE, TELLALL

(III. 1) Introduction

In the broad structural sense, TELLALL consists of a first portion, the <Lead-Part>, which may or may not be followed by a second portion, the <Recipie-Part>. In job activities of type (I) or (II), above, only the <Lead-Part> is used. For a type (III) job, the <Recipie-Part> must also be present.

Given in the next section are the layouts of TELLALL for the three possible job types, the intention being to outline the make ups of the <Lead-Part> and the <Recipie-Part>. Following this, the option cards involved are described in detail, and the entire discussion is then closed with a collection of miscellaneous notes.

(III. 2) Layouts for TELLALL

The <Lead-Part> and the <Recipie-Part> of TELLALL are each made up of option cards, this in the sense of SCANOPTIONCARD.

The <Lead-Part> begins with a "JOBCARD" option card which defines the type of activity desired, and which qualifies this activity in various respects. Then comes a "NEWREEL" option card which serves to request tape mounting. If dumping is involved, then a "DUMPHDR" option card will be next, and this card may itself call for a series of "DISPLAY" option cards to further specify the dumping action.

The <Recipie-Part> (used only for a type (III) job) consists of a succession of arbitrarily many "RECIPIES." Each recipie serves to define (specify) a selection of records contained on certain input files which are to be used in writing the output file for the job.

A recipie begins with a "RECIPIE" option card which defines the general nature of the files containing the input records of interest. This card may be followed by one or by two "NEWREEL" option cards, these being used to request the mounting of tape reels containing the needed

files. Finally, "SELECT" and/or "BLOTPRF" option cards must be present to specify precisely which input records are to be used.

Layout For Type (I) & Type (II) Jobs

Card(s)	Contents and Significance
<"JOBCARD" Card>	This is an option card with ID = JOBCARD which gives basic job information. For a type (I) job it must contain the field, DUMP-ONLY. The field, UPDATE-TRL, must be present for a type (II) job. Requests for summary listings, echo listings, and SPO messages may appear on this card.
<"NEWREEL" Card>	This option card has ID = NEWREEL and it serves to request mounting of the needed input tape. It should be noted that the tape of interest for a type (II) job is handled as an input tape, even though its ending label will be rewritten during the course of the job. That is to say, it is regarded as an input tape with a write-ring.
<"DUMPHDR" Card>	An option card with ID = DUMPHDR, this card must be present if dumping has been requested for this job. It specifies which dump activities are desired.

Card(s)	Contents and Significance
<"DISPLAY" Card(s)>	If "SPECIAL" dumping is requested (see the text for the "DUMPHDR" option card, below) then these cards must be present to specify which records are to be given such dumping.

Layout For A Type (III) Job

Card(s)	Contents and Significance
<"JOBCARD" Card>	Same as in the layout for type (I) and type (II), above, except that the field, MAKE-VTAPE, must be present on this card.
<"NEWREEL" Card>	Same as in the previous layout, except that it applies to the first output reel for this job. Additional output reels, if needed, will be called for automatically.
<"DUMPHDR" Card>	As in the previous layout, this card indicates what dumping activities are of interest. It must be absent if no dumping is requested for this job.
<"DISPLAY" Card(s)>	These have the same use here as in the type (I) and type (II) layout, above.
<"RECIPIE"> ★	This is the <Recipie-Part> of TELLALL, and it consists of a series of recipies which define collections of records to be written on the output tape.

Card(s)	Contents and Significance
★ ★ <"RECIPIE">	These recipies are processed in the order of their occurrence in TELLALL, and the records associated with any given recipie are written to the output tape in the order in which they are defined by that recipie.

Structure of a Recipie

Card(s)	Contents and Significance
<"RECIPIE" Card>	This is an option card with ID = RECIPIE. It supplies information as to the file(s) containing the records associated with this recipie.
<"NEWREEL" Card>	This card may request tape mounting for either the primary or the secondary input file for this recipie. If tapes are required to be mounted for both, then this must be the card corresponding to the primary file.
<"NEWREEL" Card>	This card, if present, serves to request tape mounting for the secondary input file.
<"SELECT" Card(s)>	If the primary input file is not a partial reel file (PRF), then these cards must be present to specify which records of the primary file are to be used to produce output records.

Card(s)	Contents and Significance
<"BLOTPRF" Card(s)>	If a PRF is involved as either the primary or the secondary input file for this recipie, then these cards must be present to specify which VIRS in that PRF, if any, are to be excluded from consideration. For the VIRS not so excluded, two possibilities for handling arise: If the subject PRF is the primary input file, then there can be no secondary input file. The VIRS not excluded by "BLOTPRF" cards will be copied to the output tape. If the PRF in question is the secondary input file, then the primary input must be from VIRTAPE, and the not excluded VIRS will be used for "OVERRIDING" purposes. This override process functions, briefly, as follows: Certain records of the primary input file (those designated by the "SELECT" cards) will be considered for use in writing output records. Any not excluded VIR on the secondary file whose accession number matches that of some primary record will replace that record for purposes of writing on the output tape.

Card(s)	Contents and Significance
	[Note: It should be understood that the management of input tapes is entirely the responsibility of the user of DOVTAPE. That is to say, if a given reel of tape is required for input, then a "NEWREEL" card must be used to request its mounting. Any previously mounted reel of the same type will, if still mounted, be removed automatically before the new reel is mounted. If desired, such a reel may be removed beforehand thru use of the AT-END feature (see the "NEWREEL" text, below) on the newreel card for that previous reel (the proper disposition for removal is "RW/LK"). An already mounted tape which is to be used in more than one recipie must be kept available by proper choice of the final (AT-END) disposition. A VIRTAPE reel which is to be so reused should be left in place, and a PRF desired for additional use should be spaced forward to END-OF-FILE and given a CLOSE(★).]

(III. 3) Descriptions of the Option Cards

Given now are the formats of the various option cards.. One recalls that the ID field of an option card must appear as the first non-blank field on the card, that column eighty must be blank, and that all option fields on the card must be set off from one another and from the ID field by one or more blank spaces.

"JOBCARD" Option Card

ID Field = JOBCARD

Option	Significance
JOB-ID	This field must be present and must be followed immediately by the ID for this job.
<Job ID>	The seven-or-fewer-character job identification.
DUMP-ONLY	The presence of this field indicates that the job being described is of type (I), i.e., that dumping is the only activity of interest.
DUMP	This field, which must be used exclusively of DUMP-ONLY, above, indicates that dumping is desired in addition to the main job action.
UPDATE-TRL	This field specifies type (II) job action, i.e., rewriting of a VIRTAPE trailer label record. For this type of job, the associated newreel card must request that a VIRTAPE file be mounted as an input tape with a write-ring.
MAKE-VTAPE	This field calls for type (III) job action, i.e., creation of a VIRTAPE file. The records to be written on this file must be specified by the associated <Recipie-Part> of TELLALL.

Option	Significance
SUMMARY	One or more summary listings of the job action will be provided if this field is present on the JOBCARD option card.
<Integer>	If this field is present and is a digit between 1 and 9, inclusive, then it will be used as the number of summary listings to be produced. Otherwise, one listing is provided.
ECHO	One or more "ECHO" listings of the file, TELLALL, will be written on the printer if this field is present.
<Integer>	If this field is present and is a digit between 1 and 9, inclusive, then it will be used as the number of echo listings to be produced. Otherwise, one listing is provided.
SPO	The presence of this field causes various tape handling messages to be written on the SPO, In its absence, such SPO writing is suppressed.
MAXBLOK-IS	This field is of interest for a type (III) job only. If present, it must be followed immediately by a five-or-fewer-digit integer which will be used to limit the number of blocks written on the output tape.

Option	Significance
<Integer>	An integer specifying the maximum number of blocks to be written on a reel during this job. For a type (III) job in which the field, MAXBLOK-IS (and hence this integer), are not present, the value, 3300, will be used. This corresponds to a tape 2200 feet in length which is written at a density of 556 frames per inch.
BC	Of interest for a type (II) job only, this field must precede the block count to be inserted into the new trailer label.
<Block Count>	The five-or-fewer-digit block count to be used in the new trailer label.
RC	Of interest for a type (II) job only, this field must precede the record count to be inserted into the new trailer label.
<Record Count>	The seven-or-fewer-digit record count to be used in the new trailer label.

"NEWREEL" Option Card

ID Field = NEWREEL

Option	Significance
VIRTAPE (or PARTIAL)	This field indicates that the reel to be mounted is a VIRTAPE (or PARTIAL) file.

Option	Significance
REEL	If present, this field must immediately precede the reel number of the reel to be mounted. In the absence of this field, the value, 001, is used.
<Integer>	The three-digit reel number mentioned above. In the case of an output file in which more than one reel is required, DOVTAPE will automatically increment the reel number and request additional reels as needed.
TAPE (or OUTAPE)	This field specifies that the reel to be mounted is an input (or OUTPUT) tape. This field must immediately precede the tape number of the reel to be mounted.
<Integer>	The three-digit tape number.
ACCT	This field must immediately precede the account number (physical tape number) of the reel to be mounted.
<Acct #>	The five-character account number (physical tape number).
EOF (or EOR)	Of interest only for an output tape (or the tape in a type (II) job), this field causes the trailer of the associated reel to be marked with END-OF-FILE (or END-OF-REEL).

Option	Significance
	This field must be present for a type (II) job or for an output reel. In the case when more than one reel is required for an output file, the automatic continuation process will mark all trailers except the last with END-OF-REEL.
AT-END	This field must immediately precede an indication of what is to be the final disposition of the reel which is to be mounted. The reference to "FINAL" here means END-OF-JOB or END-OF-RECIPIE, whichever comes first.
<Disposition Indicator>	This field may contain one of three values: RW/LK CLOSE(★) LEAVE-IN ----RW/LK causes the reel to be rewound and locked "FINALLY", i.e., at END-OF-JOB or END-OF-RECIPIE, whichever comes first. ----CLOSE(★) is of interest only for PARTIAL reel files. It causes the file to be spaced forward to END-OF-FILE (if it is not already there), and then to be given a CLOSE(★).

Option	Significance
	----LEAVE-IN causes no overt action to be taken, i.e., the next record in the file may be accessed by the next recipie, if this is desired. This type of final disposition is permitted only for VIRTAPE.
WRITE-RING	A write-ring will be placed on the reel to be mounted in response to this card iff this field is present.

"DUMPHDR" Option Card

ID Field = DUMPHDR

Option	Significance
DBL	This field causes double spacing to be used for the dumping activities called for by the option fields which follow. In its absence, single spacing will be used. It should be noted that this field may be used even if none of the options below is requested. In this case, it can have effect only if such options are activated later by a "RECIPIE" option card.
SOURCE-KEY	This field causes the source keys of all the records of the input (or output) tape to be listed on the line printer.

Option	Significance
DIRECTORY	This field causes a directory to be printed which shows the correspondence between record numbers and accession numbers for the input (or output) tape.
SPECIAL-DUMP	This field specifies that extensive dumping will be provided for certain records of the input (or output) tape. The nature of this dumping must be indicated by the next field on this card. The records which are to receive such dumping must be specified by "DISPLAY" option cards, below.
<Handling Code>	The possibilities for this field are: PACKED LINE-BY-LINE ----PACKED indicates that the record is to be dumped in a continuous, compact form. ----LINE-BY-LINE specifies that the record is to be decomposed into VIR lines, and that these are to be written as successive printer lines.

"DISPLAY" Option Card

ID Field = DISPLAY

Option	Significance
ACCESSION	If used, this field must be placed just

Option	Significance
	after the ID field. It specifies that any record designators appearing on this card are to be interpreted as accession codes. In the absence of this field, such designators will be regarded as record numbers or as two-digit relative position numbers. [Note: It is required that all the "DISPLAY" cards for a given job feature the same kind of record designators, i.e., either that they all use accession codes or that they all use record or relative position numbers.]

Given now are descriptions of configurations involving several option fields. It is the case that only one such configuration may be present on a single "DISPLAY" card, but a collection of such cards may use several different configurations.

For brevity in writing, the quantity, <Recd Desig>, will, throughout the following, denote an option field which is a record designator.

ALL	This field indicates that all the records on the reel in question are to be given the "SPECIAL" dumping called for above.
UNTIL <Recd Desig>	This configuration specifies that all the records up to and including the one corresponding to <Recd Desig> will be given the desired "SPECIAL" dumping.

Option	Significance
FROM <Recd Desig>	This configuration specifies that the record corresponding to <Recd Desig> and all the records which follow it are to be given the desired "SPECIAL" dumping.
<Recd Desig # 1> THRU <Recd Desig # 2>	This arrangement indicates that the collection of records beginning with the one corresponding to <Recd Desig # 1> and ending with that corresponding to <Recd Desig # 2>, inclusive, is to be given "SPECIAL" dumping.
DISCRETE <Recd Desig # 1> <Recd Desig # 2> ★ ★ <Recd Desig # N>	This specifies that the discrete collection of records corresponding to <Recd Desig # 1>, <Recd Desig # 2>, . . . <Recd Desig # N> is to be given "SPECIAL" dumping. Here, N must be less than or equal to ten.
ALL-BUT <Recd Desig # 1> <Recd Desig # 2> ★ ★ <Recd Desig # N>	For this arrangement, all records will be given "SPECIAL" dumping except those corresponding to the discrete collection of record designators given here. As above, N must be less than or equal to ten (10).

"RECIPIE" Option Card

ID Field = RECIPIE

Option	Significance
REC-ID	This field must immediately precede the identification for this recipie.

Option	Significance
<Recipie ID>	The seven-or-fewer-character identification for this recipie.
INPUT-IS	This field must immediately precede the primary input file designator for this recipie.
<Input Designator>	This field indicates the type of primary input file for this recipie. The types are: PARTIAL VIRTAPE In the case of PARTIAL, a PARTIAL reel file (PRF) will be the primary (and sole) input file for this recipie. All VIRS of it will be copied to the output tape except those excluded by the use of "BLOTPRF" cards. VIRTAPE indicates that records from a VIRTAPE reel will be used as primary input, In this case, the records to be copied to the output tape must be specified by "SELECT" cards.
WITH-PRF	In the PRF primary input case, this field must be present and it must immediately precede the FID of the PRF to be used. When this field is used in the presence of VIRTAPE primary input, it serves to invoke the "OVERRIDE" feature:

Option	Significance
	In the override activity, the PRF whose FID follows this field is used as a secondary input file. Certain VIRS in this PRF may be excluded from consideration by use of the "BLOTPRF" option cards. Those remaining are used to override (replace) records of the same accession number which have been designated to be copied from the primary input file.
<PRF ID>	This is the seven-or-fewer character FID of the PRF which is being used as either the primary or the secondary input file.
SOURCE-KEY	The presence of this field activates the SOURCE KEY dumping option for the duration of this recipie.
DIRECTORY	This field activates the DIRECTORY dumping option for the duration of this recipie.

"SELECT" Option Card

ID Field = SELECT

Option	Significance
ACCESSION	The use of this field on "SELECT" cards is entirely analogous to its use on "DISPLAY"

Option	Significance
	cards (see above). In the absence of this field, any record designators appearing on the "SELECT" cards of this recipie will be interpreted as record numbers.

As to the remaining options possible for "SELECT" cards, it is the case that all the configurations permitted on "DISPLAY" cards are valid for "SELECT" cards also. In the "SELECT" case, however, the records specified by such configurations will be used to produce output records (unless overriden by secondary PRF information), rather than to be given "SPECIAL" dumping.

"BLOTPRF" Option Card

ID Field = BLOTPRF

Option	Significance
ACCESSION	The use of this field on "BLOTPRF" cards is entirely analogous to its use on "DISPLAY" and "SELECT" cards. In the absence of this field, any record designators appearing on the "BLOTPRF" cards of this recipie will be interpreted as two-digit relative position numbers.
NONE	The presence of this option field indicates that none of the VIRS of the associated PRF is to be excluded from consideration for this recipie.

As with "SELECT" cards, all the configurations permitted on "DISPLAY" cards are allowed on "BLOTPRF" cards. The records (VIRS) thus specified are those which will be excluded from consideration, i.e., treated as if they were not present in the associated PRF.

(III.4) Additional Notes

(1) File opening messages for PARTIAL or VIRTAPE reels will be as per the FID or reel number specified, in the usual way.

There is one exception to this, in that the input tape for a type (II) job will always require UL-ing. The file requested by the SPO in this case will have MFID/FID equal to "TRAILER"/ "UPDATE". A SPO message will always be written by DOVTAPE to request this UL operation whenever it is needed.

(2) In using a PRF to override a primary input file, all VIRS should be blotted out except those which will actually override some primary record. The override handling begins by setting a pointer to correspond to the first "NON-BLOTTED" VIR, and as soon as that VIR is used for overriding, the pointer is advanced to the next such VIR. Thus, if a VIR is never used for overriding, then none of those following it can be used either.

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